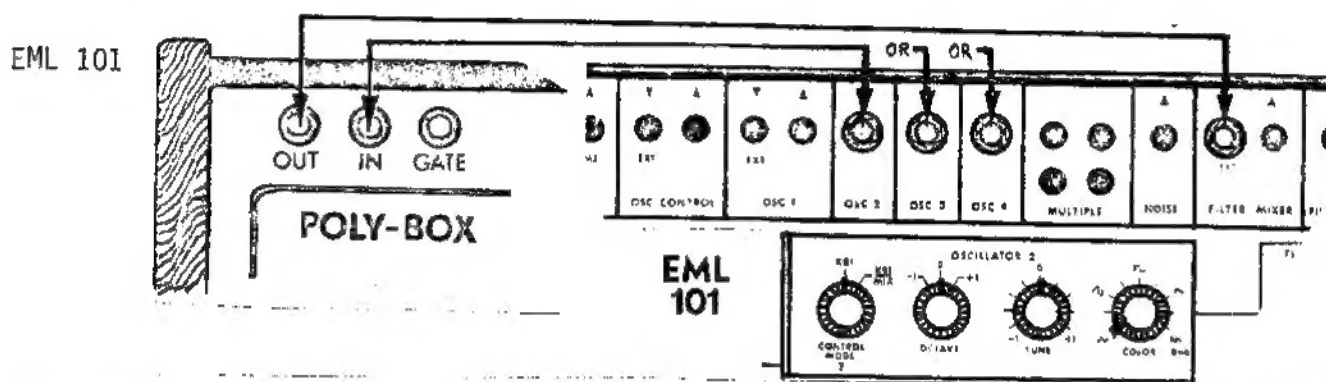


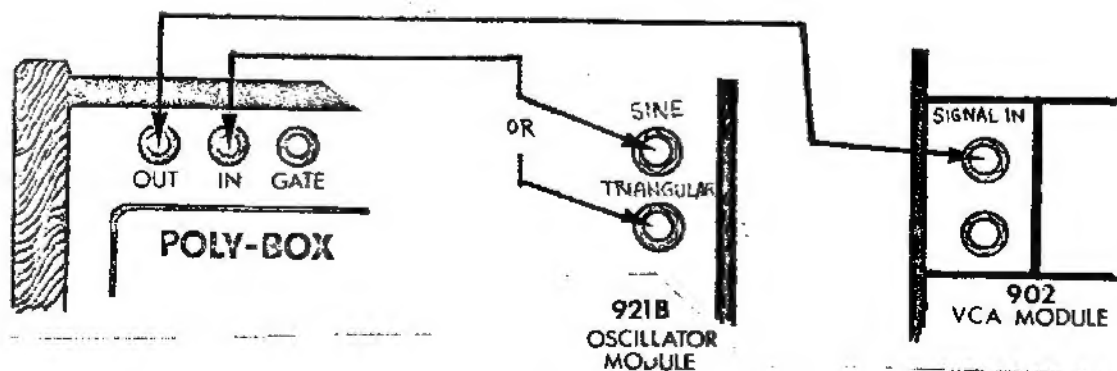
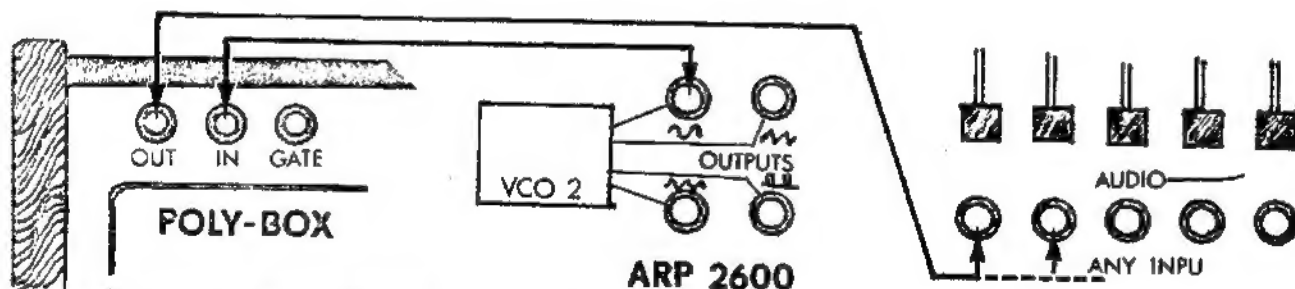
# EML POLY-BOX OWNER'S MANUAL

## Setting up your Poly-Box

1. Unpack your Poly-Box and place it near your synthesizer. Plug it into a wall outlet using the 3 wire cord. If the receptacle will not accept a 3 wire plug, use a properly grounded adapter.
2. Use the proper patchcords to connect the Poly-Box to your synthesizer. Connect the output jack of any audio oscillator on your synthesizer to the Poly-Box IN jack. Use the triangle or square oscillator waveform output for now. Connect Poly-Box to an input of the synthesizer filter (normally the filter input mixer). Don't be concerned with the Poly-Box gate at this point. Patch diagrams for some popular instruments are shown below:



ARP 2600 (Requires 1/4" to 1/8" phone plug adapters.)



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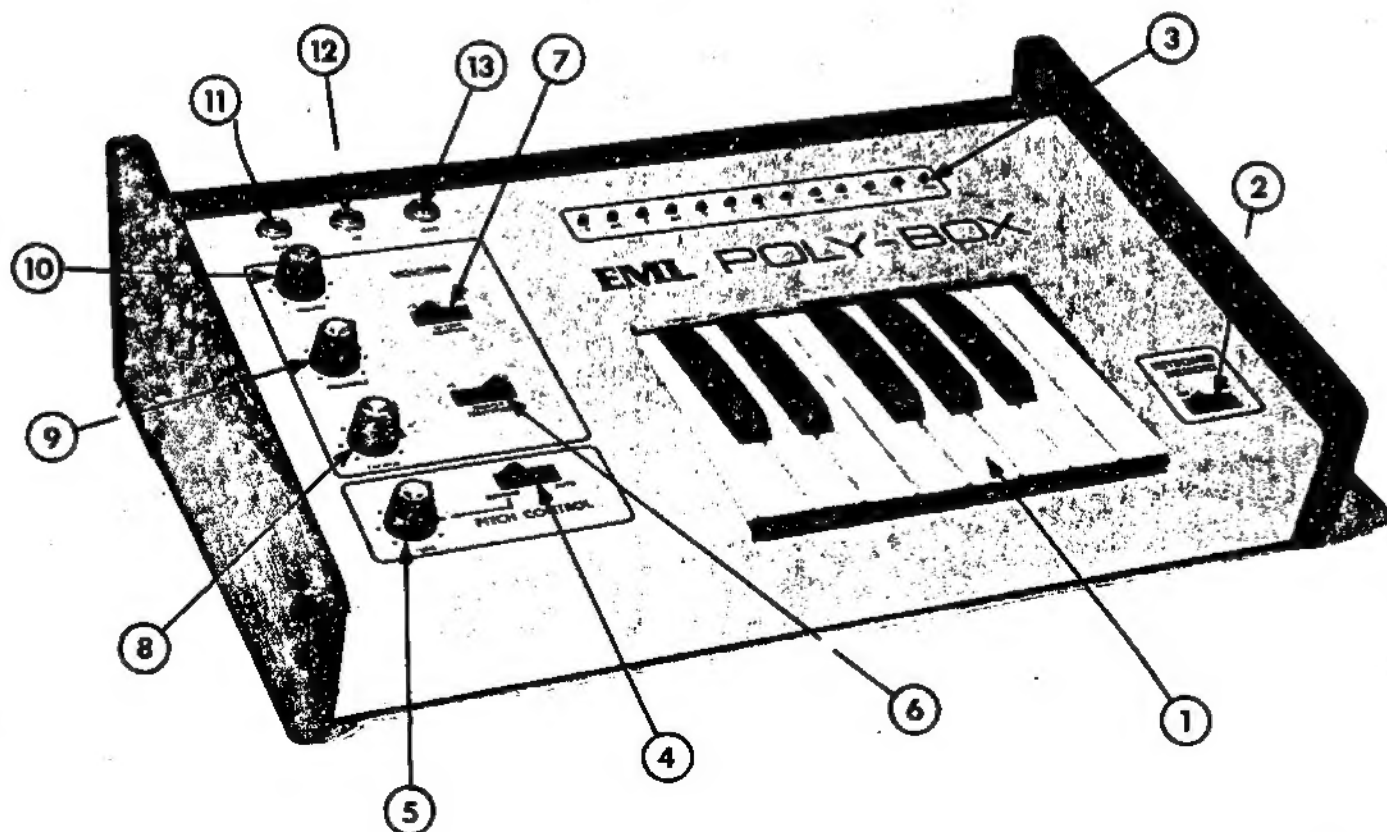
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3. Turn on your Poly-Box with the toggle switch on the rear panel.
  4. Set the panel controls of your Poly-Box as follows:

Volume	midway
Brilliance	midway
Phasing	fully counterclockwise
Tune	midway
Octave Coupler	0
Master Transpose	0
Pitch Control	Auto
Keyboard Memory	On

Read the manual thoroughly. You'll quickly discover how your Poly-Box will enable your synthesizer to produce a seemingly endless variety of new sounds.

### Introduction and Description

Poly-Box is a pitch following variable chord generator controlled by your synthesizer and Poly-Box's own keyboard. Poly-Box takes a single pitch from an oscillator output of your synthesizer and creates two banks of pitch sources. Each pitch bank contains 13 simultaneously available pitch sources at precise semitone intervals, covering a full chromatic octave. In automatic pitch following mode (Pitch Control rocker set to AUTO), Poly-Box locks onto the synthesizer pitch and follows it through bend, vibrato, protamento, and keyboard transpositions. Pitch intervals selected by the Poly-Box keyboard change in parallel with the synthesizer pitch. Pressing keys on the Poly-Box keyboard selects semitones to form intervals and produces a GATE which can be used to trigger your synthesizer envelope generators. The GATE signal begins whenever one or more keys are depressed, and stops when all keys are released.



1. Keyboard - Each key of the C-C manual selects a pair of pitches, one from each pitch bank, to be passed on to the synthesizer. In automatic pitch following mode, the low C key on the Poly-Box will select a pitch from the first pitch bank which is equal to or one octave below the pitch being followed. A pitch will also be selected from the second pitch bank which is either in the same or one or two octaves below the first pitch bank. Depressing the C# key will produce a pitch pair one semitone higher. Any number of keys may be selected simultaneously.
2. Keyboard Memory Select - Determines if the semitones you select are to be "remembered" after the keyboard is released. When the rocker is ON, a chord will be remembered until the next is selected. When OFF, the chord stops when the keyboard is released.
3. Semitone Indicator LED's - Indicate the interval or chord selected by the keyboard. If no indicator LED's are on, Poly-Box produces no sound.
4. Pitch Control - Determines the source of control for the pitch banks. In MANUAL, the banks can be tuned to any desired range; in AUTO, the pitch banks track the audio source provided at the IN jack.
5. Tune - Tunes the pitch banks when in the MANUAL control mode.
6. Master Transpose - Transposes both pitch banks simultaneously by exactly one octave. Functions whether Pitch Control is in Auto or Manual mode.
7. Octave Coupler - Transposes the second pitch bank by one or two octaves without affecting the first bank. When in the "0" position, both banks are in the same register. Functions whether pitch control is in Auto or Manual mode.
8. Phasing - Detunes one pitch bank by a precise amount to generate a rich, wavering sound. Provides greatest effect when OCTAVE COUPLER is in the "0" position (both pitch banks in the same octave).
9. Brilliance - Adjustable output filter that provides additional control of Poly-Box's sound texture. Variable between "mellow" and "bright".
10. Volume - Controls output amplitude.
11. OUT Jack - Output to synthesizer filter mixer or audio input.
12. IN Jack - Input from audio source which provides pitch control when in the AUTO mode.
13. GATE Jack - Provides a trigger signal when one or more keys of the keyboard are depressed. May be used to trigger the envelopes of your synthesizer.

## Making Music with your Poly-Box

### A. Tracking an audio input.

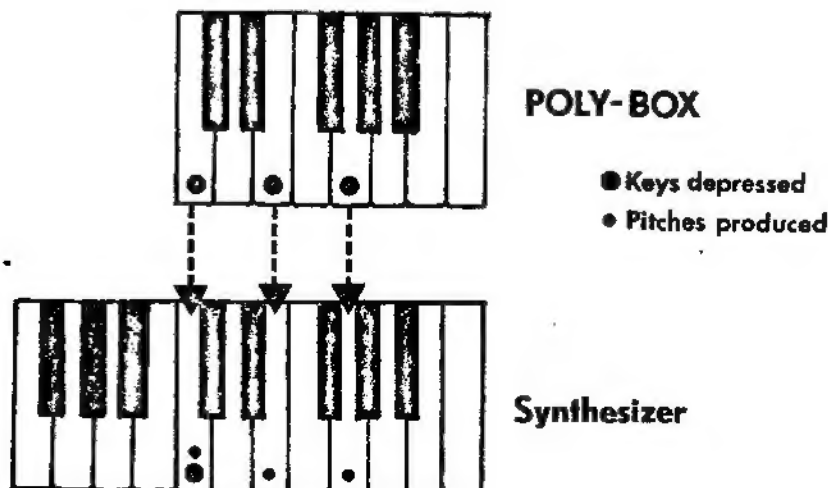
1. Set the controls of your Poly-Box as given in the "Setting up your Poly-Box" section.
2. Depress the left most key of the Poly-Box keyboard. The "R" (root) LED should light, and remain lit when the key is released. The Poly-Box will now produce a pitch identical to that of the audio source controlling the Poly-Box.
3. With your synthesizer oscillator in a middle register, play a riff on your synthesizer keyboard. Adjust your input mixer until you can hear the Poly-Box output comfortably. Alternately listen to Poly-Box and the output of the oscillator controlling Poly-Box by adjusting mixer controls. Note that Poly-Box is producing the same pitch as the oscillator.
4. Apply a little modulation (vibrato) to the oscillator controlling Poly-Box while listening to both the oscillator and Poly-Box. The Poly-Box will be modulated too! If you bend or apply portamento (glide) to your synthesizer oscillator; the Poly-Box will respond in the same fashion.
5. Experiment with the voicing controls of your Poly-Box to see how each effects the texture of the sound you hear. Depress each of the keys of the Poly-Box Keyboard and observe which LED indicator (R, m2, 2, m3, etc.) corresponds to it. Try pressing 3 keys at once - 3 LED's will light, and they will remain lit after the keys are released. As you play your synthesizer keyboard, the semitones you have selected will transpose in parallel, i.e., you are playing parallel chords.

### A note on chord construction with Poly-Box:

Depress the R, 3, and 5 keys of the Poly-Box. The Poly-Box will now produce a major chord. If the pitch of the oscillator controlling Poly-Box is middle C (C<sub>4</sub>), the notes produced by the Poly-Box will be:

C<sub>4</sub>(R), E<sub>4</sub>(3), and G<sub>4</sub>(5)

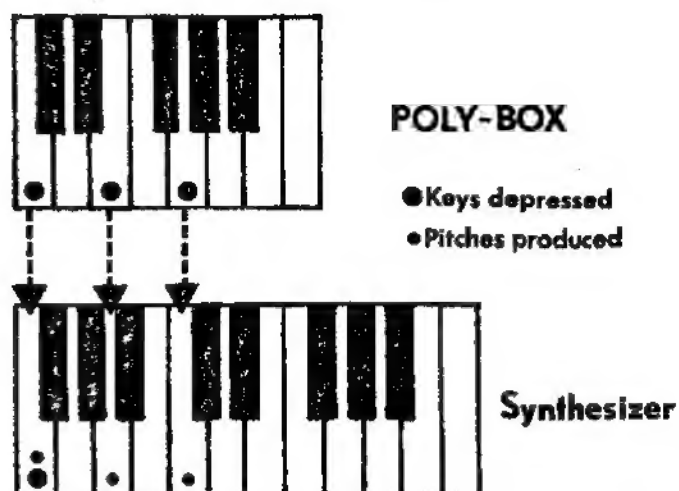
This is shown in the diagram below:



Now, if the pitch of the controlling oscillator is lowered to F below middle C ( $F_3$ ), the Poly-Box automatically transposes and produces the notes:

$F_3(R)$      $A_3(3)$      $C_4(5)$

See below:



Remember that the chord is still a major chord; Poly-Box has transposed it for you. Try the following chords:

Minor	R, m3, 5
Suspended	R, 4, 5
Major 7th	R, 3, 5, 7
Minor 7th	R, m3, 5, m7
Dominant	R, 3, 5, m7
Sixth	R, 3, 5, 6
Augmented	R, 3, m6

#### B. Using the Poly-Box as a fixed octave:

1. Set Pitch Control rocker to MANUAL
2. While listening to the Poly-Box, tune it as desired using the TUNE control.
3. Turn KEYBOARD MEMORY to "OFF". Poly-Box will now produce sound only as long as keys are held depressed.
4. Poly-Box can now be used for basso ostinato forms or to provide polyphonic accents to accompany your melodic line on the synthesizer.
5. All VOICING controls and KEYBOARD MEMORY still function as they do when Poly-Box is in the AUTO pitch control mode.

### C. Using Poly-Box Sequencers

1. Provide an input for the Poly-Box from an oscillator controlled by your Sequencer.
2. Select AUTO pitch control mode.
3. Your Poly-Box will track the sequencer-controlled oscillator, enabling you to transpose your sequence line or produce sequential chords.

Note: Should you notice a small amount of "chirping" in the output of your Poly-Box during fast sequencer lines spanning several octaves, this is normal and due to the pitch-to-voltage converter built into the Poly-Box. Many find the effect musically useful.

### D. Using the Poly-Box GATE Output

1. Using a patchcord, connect the Poly-Box GATE jack to the trigger input<sup>\*\*</sup> of your synthesizer's envelope generator. (Note: All Moog instruments require a special patchcord to initiate the S trigger to use the GATE. Request same from EML if you use Poly-Box with Moog equipment.)
2. Pressing any key(s) on the Poly-Box keyboard will trigger the envelope generator. In this way, you can control your synthesizer's filter and VCA from the Poly-Box keyboard.
3. With the Poly-Box tracking a synthesizer oscillator in the AUTO pitch control mode you can play riffs or a series of chords on the Poly-Box and transpose them simultaneously with your synthesizer keyboard. The Poly-Box will trigger your synthesizer envelope(s) as you play. Experiment a little, and you'll see that using Poly-Box this way gives your synthesizer a new polyphonic capability.

<sup>\*\*</sup> On the EML 101 the envelope trigger input will control only Envelope 2 and when the Poly-Box gate plug is fully inserted into the trigger input jack, Envelope 2 will not be triggered from the 101 keyboard. If you insert the Poly-Box gate patchcord only part way into the EML 101 trigger jack, and set the Amplitude Shaper switch to Envelope 2, you will be able to trigger Envelope 2 from either the 101 or Poly-Box keyboard.

Technical Specification:

Input: Any waveform with two zero crossing per fundamental cycle of at least 100 mV over the range from 44 Hz ( $F_1$ ) to 4162 Hz ( $C_8$ ). Input impedance 100 K ohms.

Output: Adjustable from 0 to 5 V p-p. Output frequency range 5.5 Hz to 8324 Hz. Output waveform: bright 30% cycle pulses. Output impedance 470 ohms.

Gate Output: 0 to +15 volts for the duration of any key depression.

Phasing: Phase beating rate adjustable from 0 to approx. 6 Hz.

Brilliance Filter: Low pass, 12db/octave variable from approximately 1 K Hz to greater than 20 K Hz.

Keyboard: Pratt Read, C to C, with memory.

Power Requirement: 10 Watts.

Construction: EML quality throughout. Glass epoxy circuit boards, Allen-Bradley potentiometers, gold and silver switch contacts (excludes power switch), 1/8" aluminum panel, 16 gauge steel chassis, solid cherry end bells.

Specifications subject to change without notice.